

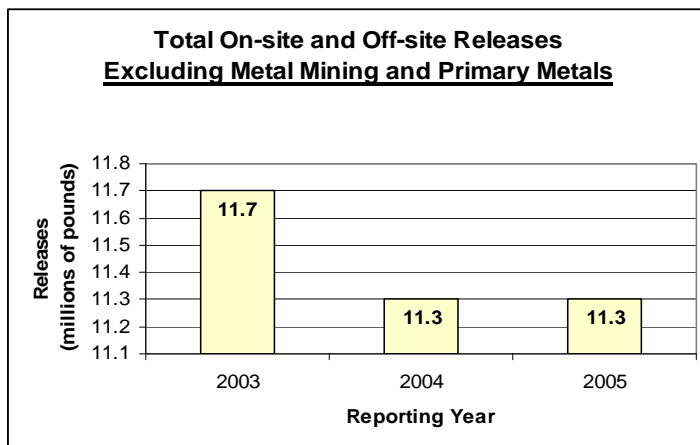
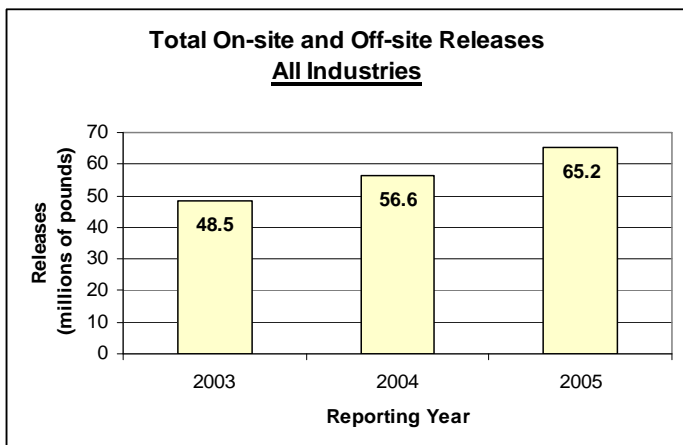


Arizona Report: 2005 Toxics Release Inventory

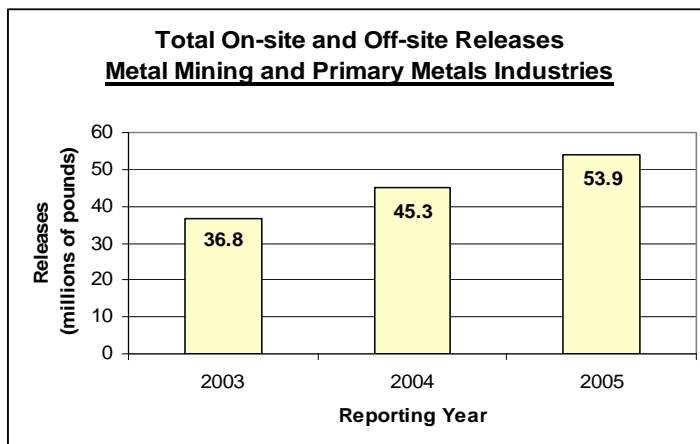
March 2007

U.S. EPA Region 9
Arizona, California,
Hawaii, Nevada, the
Pacific Islands, and
Tribal Nations

Trends in Toxic Chemical Releases for 2003 – 2005*



Total Releases for Reporting Years 2003-2005					
Year	Air	Land	Under-ground Injection	Water	Off-Site
2003	4,823,723	42,928,699	0	7,215	759,193
2004	4,307,003	51,461,949	0	6,821	831,493
2005	4,175,606	59,971,421	0	6,337	1,015,384



The 2005 Public Data Release

EPA has made public the 2005 data on toxic chemicals that were released to Arizona's air, water and land. This information comes from the Toxics Release Inventory (TRI), a federal community right-to-know program. In Arizona, 334 facilities reported a total of 65.2 million pounds of toxic chemical releases.

Facilities that meet certain criteria must report the amounts of toxic chemicals disposed of or otherwise

released on-site to air, water, land and injected underground and the amounts of chemicals transferred off-site for disposal or release. Off-site disposal or release can include land disposal at permitted hazardous waste facilities.**

The data does not indicate whether a facility is violating environmental laws. Many of the facilities reporting under this program are subject to state and federal regulations designed to protect human health and the environment. For instance, Resource

* Year to year data comparisons do not reflect changes in reporting requirements.

** No adjustments were made to account for double counting that could occur as a result of off-site transfers of some TRI facilities also being reported as on-site releases at permitted hazardous waste landfills and other TRI facilities that receive the on-site transfers.

Conservation and Recovery Act (RCRA) Subtitle C Landfills, a type of permitted hazardous waste facility, must comply with stringent requirements for liners, leak detection systems, and groundwater monitoring. Disposal in underground injection wells is regulated by EPA's Underground Injection Control Program which provides safeguards so that injection wells do not endanger current and future underground sources of drinking water.

Releases and Risk

Release is defined as the amount of a toxic chemical released on-site (to air, water, underground injection, landfills, and other land disposal), and the amount transferred off-site for disposal.

It is important to note that a release should not be directly equated with risk. To evaluate risk, release data must be combined with information about site-specific conditions, exposure, and chemical toxicity. TRI chemicals vary widely in toxicity. High volume releases of less toxic chemicals may pose less environmental risk than lower volume releases of highly toxic chemicals. Increases in on-site releases at permitted hazardous waste facilities may indicate a reduction in risk.

Industries

A facility is subject to TRI reporting requirements if it: has 10 or more full-time employees; is classified under a reportable Standard Industrial Classification (SIC) code; and manufactures, processes, or otherwise uses any of the listed toxic chemicals in amounts greater than the threshold quantities. For most chemicals (excluding Persistent Bioaccumulative and Toxic (PBT) chemicals) the thresholds are 25,000 pounds for manufactured or processed, and 10,000 pounds for otherwise used.

Manufacturing industries have been reporting their releases since 1987, and federal facilities started reporting in 1994. In 1998, an additional seven industry sectors began reporting their toxic chemical releases for the first time. These sectors are metal and coal mining, electricity generation, commercial hazardous waste treatment, solvent recovery,

petroleum bulk terminals, and wholesale chemical distributors.

Arizona's Releases

In 2005, Arizona facilities reported a 15% increase in total releases, nearly 8.6 million pounds. The increase was primarily due to a reported increase of 17%, or 8.5 million pounds, in on-site land releases. Metal mining and primary metal facilities (SIC codes 10 and 33) make up 83% of total on-site and off-site releases and have reported a 19% increase in on-site land releases (8.4 million pounds). The copper mines are primarily responsible for this increase. In particular, Phelps Dodge Miami Inc., reported a 5.2 million pound increase in on-site land releases.

Many mines extract, move, store, process, and dispose of large amounts of waste rock and ore, materials which often contain low concentrations of naturally occurring metals. The vast majority of this material is placed in surface impoundments or on the land, and the metals are reported as on-site releases to land.

Air releases in Arizona decreased 3% (131 thousand pounds), and there was a decrease of 7% (484 pounds) in water releases. Off-site releases increased by 184 thousand pounds, a 22% increase.

Facilities that were not in the metal mining and primary metal industries reported nearly the same amount in total on-site and off-site releases in 2005 that they did in 2004. In reporting year 2005, these facilities reported a 0.5% decrease in total releases (55 thousand pounds). The non-metal mining and non-primary metal facilities had a total decrease in air releases of 232 thousand pounds. Arizona Environmental Container Corp, which reported 134 thousand pounds of air releases in 2004, did not report in 2005. In addition, Cholla Power Plant reported a 223 thousand pound increase in air releases.

Persistent, Bioaccumulative, and Toxic Chemicals

In the year 2000, TRI was expanded to include additional Persistent Bioaccumulative and Toxic (PBT) chemicals and to require reporting for these chemicals at lower thresholds, ranging from 0.1 grams to 100 pounds. PBT pollutants are toxic chemicals that persist in the environment and bioaccumulate in food chains, posing risks to human health and ecosystems. In Arizona, nearly 6.7 million pounds of total on-site and off-site releases of PBT chemicals were reported. This is a 16% increase over 2004. The reported increase in lead and lead compounds was primarily responsible for this change.

PBT Chemical Releases

*Releases of persistent, bioaccumulative and toxic (PBT) chemicals in pounds
Dioxin and dioxin-like compounds data are not in Toxicity Equivalence (TEQ).*

Chemical	Total On- and Off-Site Releases		Percent Change
	2004	2005	
Lead and Lead Compounds (in pounds)	5,666,097.68	6,599,763.48	16%
Polychlorinated Biphenyls (PCBs) (in pounds)	83,746	68,627	-18%
Mercury and Mercury Compounds (in pounds)	4,217.32	4,841.26	15%
Polycyclic Aromatic Compounds (PACs) (in pounds)	1,048.68	1,158.24	10%
Benzo (G,H, I) Perylene (in pounds)	1.185	1.098	-7%
Tetrabromobisphenol A (in pounds)	0	0	---
Dioxin and Dioxin-like Compounds (in grams)	40.3653	15.5423	-61%

In determining release quantities for metal compounds, facilities only consider the primary metal portion of the compound. For instance, a facility reporting for lead compounds only reports the lead portion of the lead compounds released. Hence, the table above gives combined values for lead and lead compound releases and mercury and mercury compound releases. The PBT chemicals are ranked by 2005 total releases. The data is in pounds for all chemicals except dioxin and dioxin compounds, which is in grams.

Lead and Lead Compounds

Starting in the year 2001, lead and lead compounds were reported as Persistent Bioaccumulative and Toxic (PBT) chemicals. While lead and lead compounds have been on the list of reportable chemicals since 1987, for the year 2001 the reporting threshold was drastically lowered (from 25,000 pounds manufactured or processed, and 10,000 pounds otherwise used to 100 pounds manufactured, processed or otherwise used). As a result, additional facilities are required to report releases of lead and lead compounds.

A 934 thousand pound increase in reported lead releases drove the increase in PBT releases in 2005. Approximately 6.6 million pounds of total on-site and off-site releases of lead were released in Arizona. Ninety-five percent of lead releases were from on-site land disposal at metal mining and primary metal facilities. Larger increases in lead releases came from the following facilities: ASARCO LLC Ray Operations Mine, with a 465 thousand pound increase; Phelps Dodge Sierrita Inc., with a 372 thousand pound increase; and Phelps Dodge Bagdad Inc., with at 276 thousand pound increase.

Mercury and Mercury Compounds

There was a 15% (624 pounds) reported increase in total releases of mercury. This change was primarily driven by an increase in on-site land releases, which increased 549 pounds. The largest increase to land releases was reported from Phelps Dodge Sierrita Inc., an increase of 199 pounds of on-site land releases.

There was an 8% or 132 pound increase in mercury air releases in 2005. This was primarily due to a 309 pound increase in mercury air releases at Coronado Generating Station.

Dioxin and Dioxin-like Compounds

Total releases of dioxin and dioxin-like compounds decreased by nearly 25 grams, or 61%. Off-site releases of dioxin (25 grams) were the largest contributing factor to this decrease and this decrease occurred at Imsamet of Arizona.

Facilities Releasing Largest Quantities of Chemicals

The top ten facilities in Arizona for total on-site and off-site releases of all chemicals are:

- ❶ Phelps Dodge Miami Inc. (Claypool, Gila County) with 26.7 million pounds.
- ❷ ASARCO Inc. Ray Complex Hayden Smelter & Concentrator (Hayden, Gila County) with 14.0 million pounds.
- ❸ Phelps Dodge Morenci Inc. (Morenci, Greenlee County) with 5.4 million pounds.
- ❹ Cholla Power Plant (Joseph City, Navajo County) with 3.4 million pounds.
- ❺ Tucson Electric Power Co Springerville Generating Station (Springerville, Apache County) with 2.4 million pounds.
- ❻ Phelps Dodge Sierrita Inc. (Green Valley, Pima County) with 2.3 million pounds.
- ❼ Phelps Dodge Bagdad Inc. (Bagdad, Yavapai County) with 2.0 million pounds.
- ❽ Navajo Generating Station (Page, Coconino County) with 1.7 million pounds.
- ❾ ASARCO LLC Ray Operations Mine (Kearny, Pinal County) with 1.6 million pounds.
- ❿ ASARCO LLC Mission Complex (Sahuarita, Pima County) with 1.3 million pounds.

The top ten facilities in Arizona for total on-site and off-site releases of PBT chemicals are:

- ❶ Phelps Dodge Sierrita Inc. (Green Valley, Pima County) with 1.6 million pounds.
- ❷ ASARCO LLC Ray Operations Mine (Kearny, Pinal County) with 1.2 million pounds.
- ❸ Phelps Dodge Miami Inc. (Claypool, Gila County) with 1.1 million pounds.
- ❹ ASARCO LLC Mission Complex (Sahuarita, Pima County) with 1.0 million pounds.
- ❺ ASARCO LLC Ray Complex Hayden Smelter and Concentrator (Hayden, Gila County) with 980 thousand pounds.
- ❻ Phelps Dodge Bagdad Inc. (Bagdad, Yavapai County) with 456 thousand pounds.
- ❼ Romic Environmental Technologies Inc. (Chandler, Maricopa) with 70 thousand pounds.
- ❽ Earth Protection Services (Phoenix, Maricopa County) with 67 thousand pounds.

- ❾ Tuscon Electrical Power Co. Springerville Generating (Springerville, Apache County) with 61 thousand pounds.
- ❿ Cholla Power Plant (Joseph City, Navajo County) with 33 thousand pounds.

On-line Access

For national information on data releases, see:

<http://www.epa.gov/tri>

The TRI data is available through Envirofacts Warehouse, EPA's premier internet site for distributing environmental information at:

<http://www.epa.gov/enviro>

or the TRI Explorer tool:

<http://www.epa.gov/triexplorer>

For general information on the Toxics Release Inventory, including reporting requirements for businesses, go to:

<http://www.epa.gov/region09/toxic/tri>

For additional information on dioxin, go to:

<http://www.epa.gov/ncea/dioxin.htm>

For more information on the EPA's PBT Chemicals Program, go to:

<http://www.epa.gov/opptintr/pbt/>

Information and Assistance

Region 9 staff will answer questions and assist you in learning more about the TRI Program in Region 9.

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